Revised DØ Upgrade Schedule

While we have made great progress in building the Run II detector, we have seen the schedules for several large sub-systems slip. For various reasons, the Silicon Microstrip Tracker (SMT), the Fiber Tracker (FT), the Tracker Electronics and the Forward Muon System have all been delayed about three months beyond the baseline adopted at the Lehman Review in January 1998. We now expect to begin the roll-in process May 15, 2000.

The new roll-in date is a result of a comprehensive review of our project schedule. The detailed schedule of each sub-system was studied and revised to better reflect progress to date and current plans for accomplishing work in the future. We have completed revision of the schedule. We are in the process of reviewing the resources loaded into the schedule, both labor and funding, required to support the project. A grounds-up review of the cost estimate to complete the project has been carried out. Once the necessary resources are set, we will derive a funding profile or spending plan for the year. We will then generate appropriate Change Requests as required for review by the PMG and approval by the Director.

The schedule continues to be relatively aggressive. All detector systems are in production and we will sharpen our plans as actual production rates become better known. However, vendor problems continue to introduce uncertainty in a few areas:

1. Silicon sensors – though real progress has been made, we continue to be very concerned about Micron's ability to deliver sensors at a rate consistent with our needs. While Micron claims they will deliver all silicon to DØ by the end of October of this year, we have assumed in our schedule that the silicon will all be delivered by the end of this calendar year. In a step to improve that likelihood, we are in the process of shifting some of the Micron work to another vendor. We will have a clearer view of the silicon delivery problem in a few months.
2. Silicon High Density Interconnect flex circuits (HDIs) – we have recently received good circuits at a moderate price from a vendor and expect to qualify another. The schedule assumes procurement of HDIs at a normal pace and we believe that to be a valid assumption now.
3. Silicon 'low-mass' cables – Allied Signal/Kansas City has made prototypes successfully and we anticipate they will be able to supply the one thousand eight-foot cables we need without delaying our project.
4. VLPC cassette flex cable – we have not converged on a specific design of this cable that can be manufactured at a reasonable cost. Though cassette assembly is on hold pending cables, we will have all the cassettes built before Run II begins if the cable problem is resolved in the next few months.

A summary of the preparation and assembly of the major components of the detector upgrade and the roll-in into the Collision Hall is presented below. The entire experimental apparatus is mounted on a platform and rolled in as a single unit, with one exception. The massive forward muon C-layer detectors, each containing 120 tons of shielding, are rolled into the Collision Hall on the sidewalks at the North and South ends of the hall.

Tracking System

- First of eight Fiber Tracker cylinders complete — 6/24/99
  ribbons fabricated, connectorized and mounted on cylinder
- **Fiber Tracker assembly complete** — **1/26/00**
  all eight cylinders inter-mounted to form integrated detector, ready to receive SMT
- VLPC Cassette assembly begun — 6/11/99
- All Cassettes assembled, tested — 5/31/00

- All Barrel/Disk modules complete 2/03/00
- Forward H-disks ready 2/10/00
  to be installed at DAB once tracker is in position and cabled
- **Central silicon detector complete 2/17/00**
- **Central silicon with beam pipe installed in Fiber Tracker at Lab 3 3/02/00**

- **Tracker (SMT and FT) installed in solenoid on platform 3/16/00**
- Tracker cabled and ready 6/09/00

- South Forward Preshower (FPS) built, shipped from BNL 8/24/99
- South FPS installed on face of End Calorimeter 9/08/99
- **Both FPS detectors installed, cabled 4/18/00**

- Tracker readout electronics production complete 10/25/99
- Tracker readout electronics installed, tested 11/17/99
- FT front-end electronics production begun 7/12/99
- FT front-end electronics built, tested 3/08/00

Calorimeter/ICD

- Preamp boards assembled, tested 9/22/99
- Baseline Subtractors assembled, tested 12/15/99
- Central and North End Calorimeter electronics installed, tested 3/29/00
- **South End Calorimeter moved onto platform 3/21/00**
  following tracker installation, thereby enabling completion of calorimeter electronics installation
- Calorimeter electronics complete 5/30/00

- InterCryostat Detector (ICD) module assembly begun 6/14/99
- Both detectors arrive at Fermilab 9/21/99
- **Both ICD detectors installed on End Calorimeters, cabled 3/28/00**

Muon System

- Refurbish, reinstall Central Muon Proportional Drift Tubes 6/01/99
- All Central B, C-layer counters installed 6/28/99
- **Central A-layer counter installation finished 8/31/99**

- Receive all Forward trigger counters from IHEP(Protvino) 10/14/99
- Trigger counters octants assembled, tested 4/19/00
- Begin trigger counter octant installation 8/05/99
  must wait for installation of tracking detector octants

- **Receive all Forward tracking detectors (MDTs) from DUBNA 11/03/99**
- MDT octants assembled, tested 3/31/00
  includes front-end electronics
- Begin MDT octant installation on End toroids 7/22/99
- Complete installation of A, C and B-North trigger and tracking planes 3/20/99
  includes connection to HV, electronics, gas system and completion of survey
- **Move platform West to pick up End toroids 3/22/00**
  prior to this, B-layer side of South toroid not accessible
- B-South trigger and tracking planes installed 5/10/00

Roll-In

• **Shielding wall removed**	**5/17/00**
• Begin assembly of Forward Muon C-layer trusses on sidewalks	5/18/00
• Forward Muon C-layer trusses installed in Collision Hall	6/14/00
• **Detector rolled into Collision Hall**	**6/16/00**
• Shielding wall replaced, ready for collisions	7/10/00

Trigger

• Trigger framework installed, commissioned	4/30/99
• Level 1 trigger commissioned	5/02/00
• Level 2 trigger commissioned including calorimeter, muon, tracking and FPS preprocessors	7/10/00
• Data Acquisition System complete	2/07/00
• Level 3 trigger ready for collisions	5/30/00
• Online system ready	4/04/00